

1 **CLAIMS**

2 1. A method of determining portions of a surface within a space that are
3 occluded from an observation point, comprising:

4 (a) defining a horizon on the surface with reference to the observation point; and
5 (b) identifying a region within the space that is beneath the horizon.

6 2. The method of claim 1, wherein step (b) comprises the step of projecting a
7 ray from the observation point that intersects the horizon and defines an area that
8 is occluded from the observation point.

9 3. The method of claim 1, further comprising the steps of:

10 (c) determining the depth of the region identified in step (b); and
11 (d) disregarding the region identified in step (b) when the depth is less than a
12 predetermined threshold.

13 4. The method of claim 1, further comprising the step of:

14 identifying a region within the space that is beyond the horizon.

15 5. The method of claim 1, wherein step (a) comprises the step of generating a
16 plurality of coordinates, each of the coordinates including an azimuth angle, α , and
17 a horizon elevation angle, θ .

18 6. The method of claim 5, wherein said generating step comprises, for each
19 coordinate, the steps of:

- (i) selecting α ;
- (ii) determining θ , so that a ray projected from the observation point at angles α and θ intersects an apex of the surface.

7. A system for determining portions of a surface in a space that are occluded from an observation point, comprising:

means for defining a horizon on the surface with reference to the observation point; and

means for identifying a region within the space that is beneath the horizon.

8. The system of claim 7, wherein said identifying means comprises means for projecting a ray from the observation point that intersects the horizon and defines an area that is occluded from the observation point.

9. The system of claim 7, further comprising:

means for determining the depth of the region that is beneath the horizon; and means for disregarding the region that is beneath the horizon when the depth is less than a predetermined threshold.

10. The system of claim 7, further comprising:

means for identifying a region within the space that is beyond the horizon.

11. The system of claim 7, wherein said defining means comprises means for generating a plurality of coordinates, each of the coordinates including an azimuth angle, α , and a horizon elevation angle, θ .

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2 12. The system of claim 11, wherein said generating means comprises, for each
3 coordinate:

4 (i) means for selecting α ;
5 (ii) means for determining θ , so that a ray projected from the observation point at
6 angles α and θ intersects an apex of the surface.

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8 13. A computer program product comprising computer program logic for
9 enabling a processor in a computer system to determine portions of a surface in a
10 space that are occluded from an observation point, comprising:

11 means for enabling the processor to define a horizon on the surface with reference
12 to the observation point; and
13 means for enabling the processor to identify a region disposed on the surface that
14 is beneath the horizon.